Fig. 1

Fig. 2

Fig. 3

FIG. 4

RULE REMAINING IN SET? `30` ──No──→ TERMINATE OPERATION `32`

│
Yes
↓

SELECT RULE FROM PREDEFINED SET OF RULES TO BE APPLIED TO SET OF SHAPE C_0 `34`

↓

SET COUNTER i TO ONE; SET $S_0 = \emptyset$ `36`

↓

DECOMPOSE LEFT-HAND SHAPE OF RULE INTO N SUBSHAPE GROUPS $s_{i...N}$ `38`

↓

$s_i = \emptyset$? `40` ──Yes──→ SET $S_i = \emptyset$; SET C_i TO C_{i-1} `42` ──→ i = N ? `43`

│   │
No   No
↓   ↓

SEARCH SET OF SHAPES C_{i-1} FOR SUBSHAPE GROUP s_i ACCORDING TO TRANSFORMATIONS APPROPRIATE FOR SUBSHAPE GROUP `46`

INCREMENT COUNTER BY ONE `44`

↓

FIND SUBSHAPE GROUP s_i IN C_{i-1} ? `48` ──No──→ (to Yes of i=N 43)

│
Yes
↓

GENERATE SET OF SHAPES S_i CORRESPONDING TO OCCURRENCES OF SUBSHAPES OF GROUP s_i FOUND IN C_{i-1} `50`

↓

SUBTRACT SHAPES S_i FROM C_{i-1} TO GENERATE SET OF SHAPES C_i `52`

↓

ADD SET S_i TO SUM OF SETS $S_{i-1,...,0}$ USING CONNECTIVITY TECHNIQUE `54`

i = N ? `56` ──No──→ DETERMINE RELATIVE CONNECTIVITY `58`

│
Yes
↓

SUM OF SET $S_{i...N}$ CORRESPOND TO TRANSFORMATIONS OF LEFT-HAND SHAPE OF SELECTED RULE FOUND IN SET OF SHAPES C_0 `59`
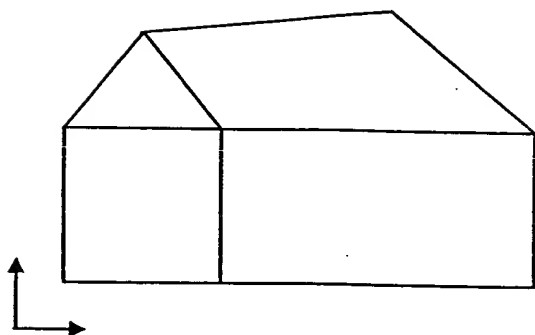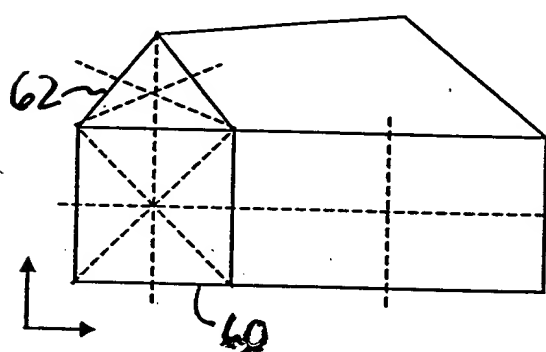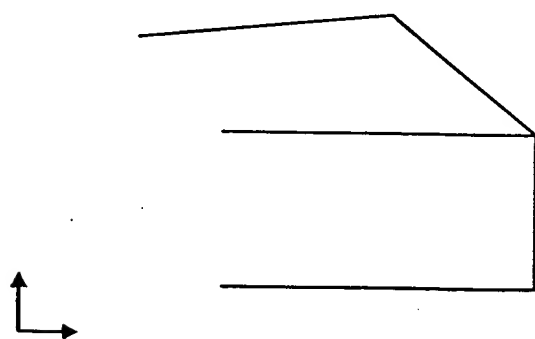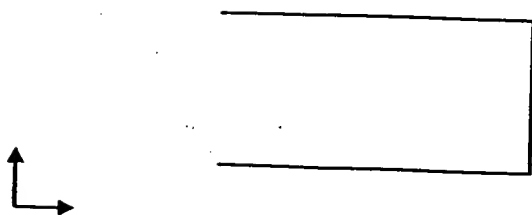
Fig. 5

Fig. 6

62

60

Fig. 7

Fig. 8
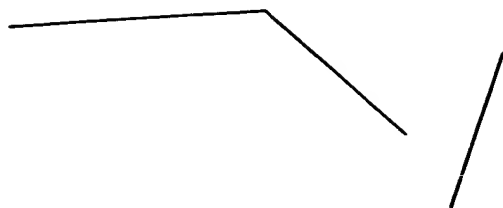
Fig. 9

Fig. 10

Fig. 11
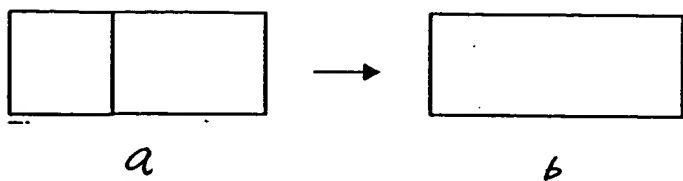
Fig. 12
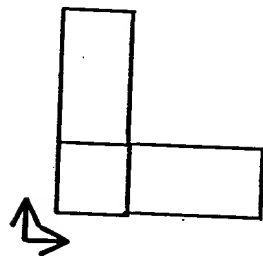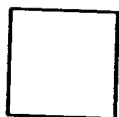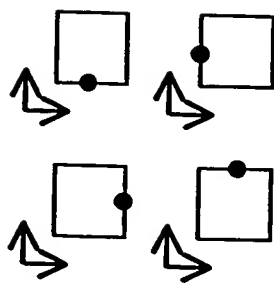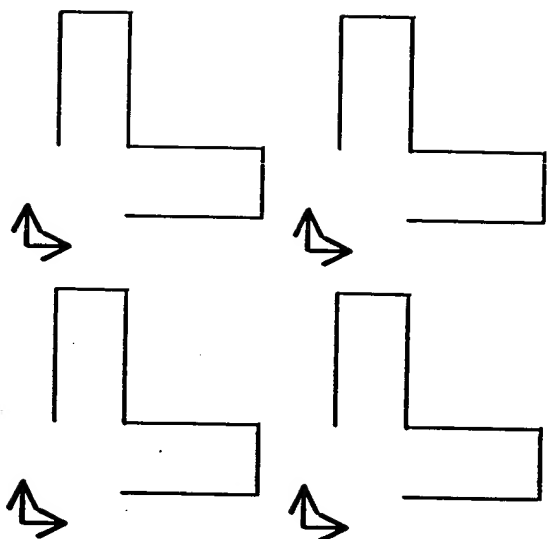
Fig. 13

C_0

s1

s2

Fig. 14
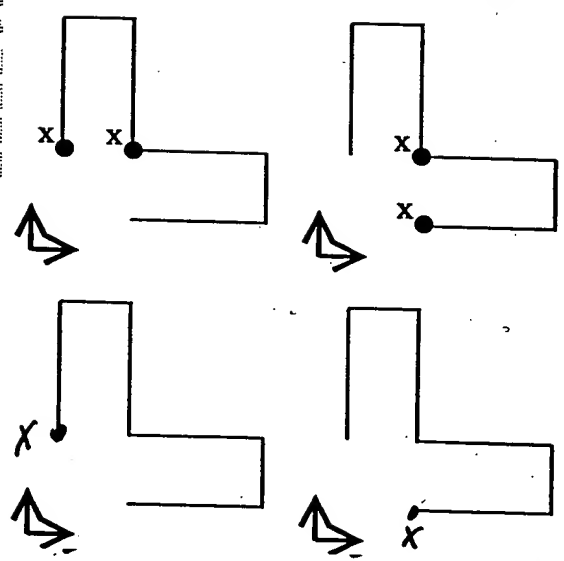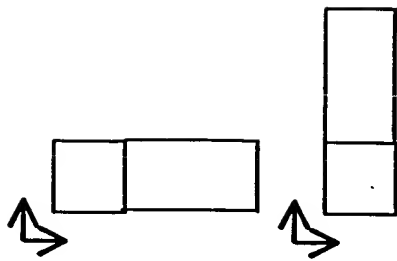

Fig. 15

S_1

Fig. 16

C_1

Fig. 17

Fig. 18

$S_1 + S_2$
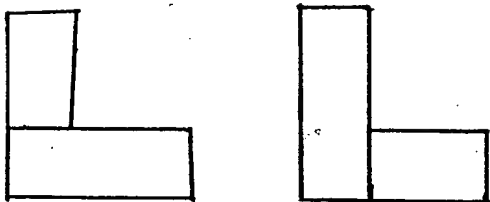
Fig. 19
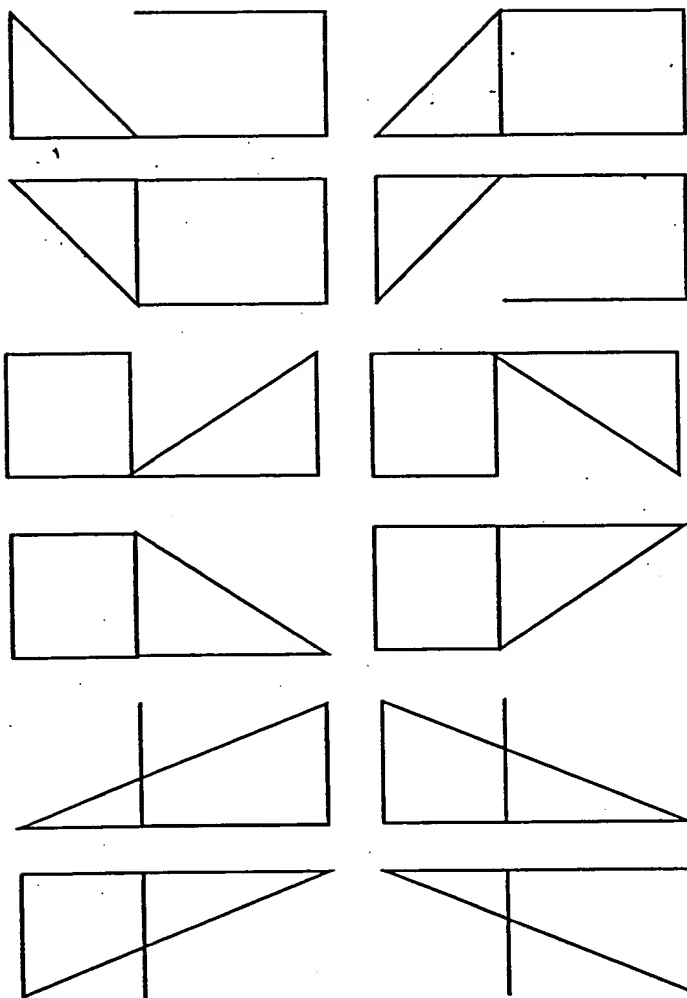
Shape a
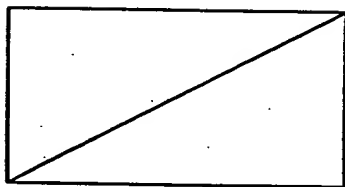
Shape b

Fig. 20

C_o
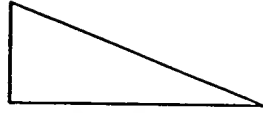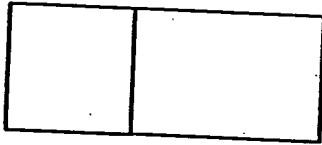
Fig. 21

Fig. 22

Fig. 23
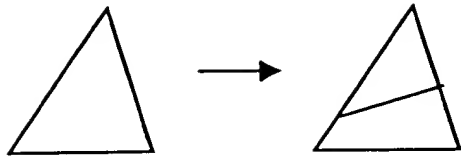
Rule 1
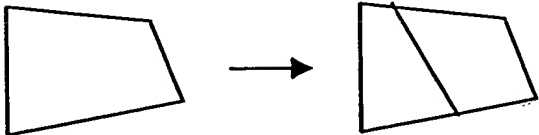
Rule 2
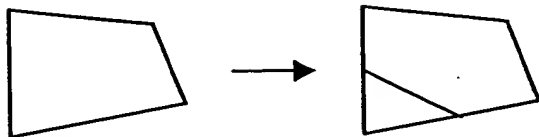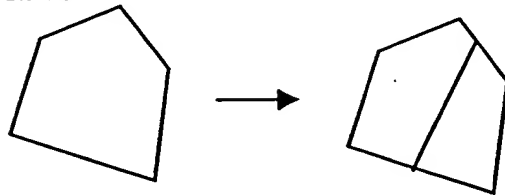
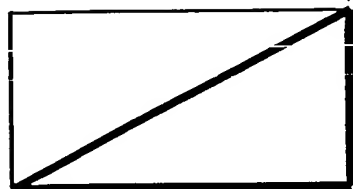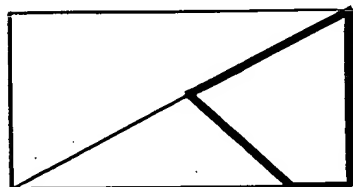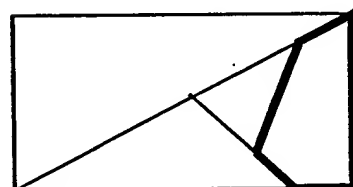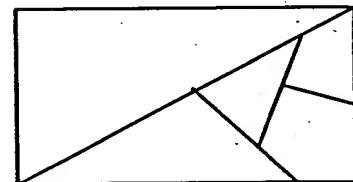**Fig. 24**

Rule 3

Rule 4

Fig. 25

(a)

initial shape

(b)

apply Rule 1

(c)

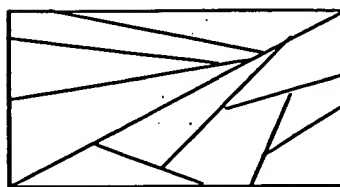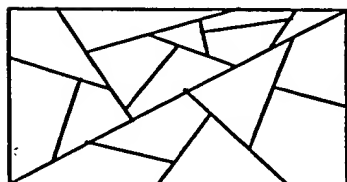apply Rule 3

(d)

apply Rule 4

Fig. 26

Fig. 27